## AMENDMENTS TO THE CLAIMS

**This listing of claims will replace all prior versions and listings of claims in the application:**

## LISTING OF CLAIMS:

1. (currently amended): A collimating plate comprising:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, from which collimated light issued;

a plurality of light entrance areas disposed on another surface of said lens substrate, into which light is launched, each having a circular form, a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses; ~~and~~

a light shield layer formed on said another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas~~,~~; and

a diffuse reflecting layer formed on a surface of said light shield layer at a light entrance side than said light shield layer so as to cover other area than said plurality of light entrance areas,

wherein when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a diameter of each of said plurality of light entrance areas by R; and

a size of each of said plurality of microlenses by Sr, the following formula (1):

$$Sr \geq 2t \times \tan \theta + R \qquad\qquad (1)$$

(with the proviso that $\theta = \sin^{-1} (1/n)$)

is satisfied.

Claim 2 (canceled).

3. (original): The collimating plate according to claim 1, wherein said plurality of microlenses are either in circular form when viewed from a direction of the optical axis and are arranged in a closest packing state or in hexagonal form when viewed from the direction of the optical axis and are arranged in a hexagonal close-packed state.

4. (original): The collimating plate according to claim 1, wherein said refractive index of said lens substrate is between 1.4 and 2.

5. (currently amended): A lighting apparatus comprising:

a-at least one light source;

a lamp housing for containing said at least one light source, whose inner surfaces are covered with a diffuse reflecting layer; and

a collimating plate for condensing light issued from said at least one light source and reflected by said inner surfaces of said lamp housing to produce collimated light and then issuing said collimated light,

wherein said collimating plate comprises:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, from which said collimated light is issued;

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a plurality of light entrance areas disposed on another surface of said lens substrate, into which said light from said lamp housing is launched, each having a circular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses; ~~and~~

a light shield layer formed on said another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas~~,~~; and

a diffuse reflecting layer formed on a surface of said light shield layer at a light entrance side than said light shield layer so as to cover other area than said plurality of light entrance areas,

wherein when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a diameter of each of said plurality of light entrance areas by R; and

a size of each of said plurality of microlenses by Sr, the following formula (1):

$$Sr \geq 2t \times \tan \theta + R \qquad\qquad (1)$$

(with the proviso that $\theta = \sin^{-1}(1/n)$)

is satisfied.

6. (currently amended): A lighting apparatus comprising:

~~a collimating plate; and~~

a plurality of light sources~~,~~; and

a collimating plate for producing collimated light from light issued from said plurality of light sources and then issuing said collimated light,

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wherein said collimating plate comprises:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, from which said collimated light is issued;

a plurality of light entrance areas disposed on another surface of said lens substrate, into each of which said light issued from each of said plurality of light sources is launched, each having a circular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses; and

a light shield layer formed on said another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas; and

a diffuse reflecting layer formed on a surface of said light shield layer at a light entrance side than said light shield layer so as to cover other area than said plurality of light entrance areas,

wherein when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a diameter of each of said plurality of light entrance areas by R; and

a size of each of said plurality of microlenses by Sr, the following formula (1):

$$Sr \geq 2t \times \tan \theta + R \qquad\qquad (1)$$

(with the proviso that $\theta = \sin^{-1}(1/n)$)

is satisfied, and

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wherein said plurality of light sources are disposed in said plurality of light entrance areas of said collimating plate respectively.

7. (original): The lighting apparatus according to claim 6, wherein a light emission size of each of said plurality of light sources is smaller than a size of each of said plurality of light entrance areas.

8. (original): The lighting apparatus according to claim 6, wherein said plurality of light sources are LEDs or organic EL devices.

9. (currently amended): A liquid crystal display apparatus comprising:

a liquid crystal display panel; and

a lighting apparatus for launching collimated light into said liquid crystal display panel, wherein said lighting apparatus comprises:

a at least one light source;

a lamp housing for containing said at least one light source, whose inner surfaces are covered with a diffuse reflecting layer; and

a collimating plate for condensing light issued from said at least one light source and reflected by said inner surfaces of said lamp housing to produce said collimated light and then issuing said collimated light,

wherein said collimating plate comprises:

a lens substrate;

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a plurality of microlenses disposed on a surface of said lens substrate, from which said collimated light is issued;

a plurality of light entrance areas disposed on another surface of said lens substrate, into which said light from said lamp housing is launched, each having a circular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses; and

a light shield layer formed on said another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas; and

a diffuse reflecting layer formed on a surface of said light shield layer at a light entrance said than said light shield layer so as to cover other area than said plurality of light entrance areas,

wherein when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a diameter of each of said plurality of light entrance areas by R; and

a size of each of said plurality of microlenses by Sr, the following formula (1):

$$Sr \geq 2t \times \tan \theta + R \qquad\qquad (1)$$

(with the proviso that $\theta = \sin^{-1} (1/n)$)

is satisfied.

10. (currently amended): The liquid crystal display apparatus according to claim 9, further comprising a light diffusing plate for diffusing an image-bearing collimated light which has passed through said liquid crystal display panel.

11. (currently amended): A liquid crystal display apparatus comprising:

a liquid crystal display panel; and

a lighting apparatus for launching collimated light into said liquid crystal display panel,

wherein said lighting apparatus comprises:

a collimating plate; and

a plurality of light sources, ; and

a collimating plate for producing said collimated light from light issued from said

plurality of light sources and then issuing said collimated light,

wherein said collimating plate comprises:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, from which said

collimated light is issued;

a plurality of light entrance areas disposed on another surface of said lens substrate, into

each of which said light issued from each of said plurality of light sources is launched, each

having a circular form a center of which is on an optical axis of each of said plurality of

microlenses and set on another surface of the lens substrate reverse to said plurality of

microlenses; and

a light shield layer formed on said another surface of said lens substrate reverse to said

plurality of microlenses so as to cover other area than said plurality of light entrance areas, ; and

a diffuse reflecting layer formed on a surface of said light shield layer at a light entrance side than said light shield layer so as to cover other area than said plurality of light entrance areas,

wherein when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a diameter of each of said plurality of light entrance areas by R; and

a size of each of said plurality of microlenses by Sr, the following formula (1):

$$Sr \geq 2t \times \tan \theta + R \qquad\qquad\qquad (1)$$

(with the proviso that $\theta = \sin^{-1} (1/n)$)

is satisfied, and

wherein said plurality of light sources are disposed in said plurality of light entrance areas of said collimating plate respectively.


12. (withdrawn): A collimating plate comprising:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate; a plurality of light entrance areas, each having a rectangular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses; and a light shield layer formed on another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas, wherein, when a refractive index of said lens substrate is represented by n; a thickness of said lens substrate by t; a length of a side of each of said plurality of light entrance

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areas by A; a length of another side of each of said plurality of light entrance areas by B; a size

of each of said plurality of microlenses in a direction of said length A represented by Sa; and a

size of each of said plurality of microlenses in a direction of said length B represented by Sb, the

following formulae (2) and (3):

$$Sa \geq 2t \times \tan \theta + A \qquad\qquad (2)$$

$$Sb \geq 2t \times \tan \theta + B \qquad\qquad (3)$$

(with the proviso that $\theta = \sin^{-1} (1/n)$)

are satisfied.

13. (withdrawn): The collimating plate according to claim 12, wherein said plurality of

microlenses are either in square form viewed from a direction of the optical axis and are arranged

in a square closed-packed state or in rectangular form viewed from the direction of the optical

axis and are arranged in a rectangular closed-packed state.

14. (withdrawn): A lighting apparatus comprising:

a light source;

a lamp housing for containing said light source, whose inner surfaces are covered with a

diffuse reflecting layer; and

a collimating plate, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas, each having a rectangular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses; and

a light shield layer formed on another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas, wherein, when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a length of a side of each of said plurality of light entrance areas by A;

a length of another side of each of said plurality of light entrance areas by B;

a size of each of said plurality of microlenses in a direction of said length A represented by sa; and

a size of each of said plurality of microlenses in a direction of said length B represented by Sb, the following formulae (2) and (3):

$$Sa \geq 2t \times \tan \theta + A \qquad\qquad\qquad (2)$$

$$Sb \geq 2t \times \tan \theta + B \qquad\qquad\qquad (3)$$

(with the proviso that $\theta = \sin^{-1}(1/n)$)

are satisfied.


15. (withdrawn): A lighting apparatus comprising:

a collimating plate; and

a plurality of light sources, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas, each having a rectangular form a center of which is on

an optical axis of each of said plurality of microlenses and set on another surface of the lens

substrate reverse to said plurality of microlenses; and

a light shield layer formed on another surface of said lens substrate reverse to said

plurality of microlenses so as to cover other area than said plurality of light entrance areas,

wherein, when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a length of a side of each of said plurality of light entrance areas by A;

a length of another side of each of sa d plurality of light entrance areas by B;

a size of each of said plurality of microlenses in a direction of said length A represented

by Sa; and

a size of each of said plurality of microlenses in a direction of said length B represented

by Sb, the following formulae (2) and (3):

$$Sa \geq 2t \times \tan \theta + A \qquad\qquad (2)$$

$$Sb \geq 2t \times \tan \theta + B \qquad\qquad (3)$$

(with the proviso that $\theta = \sin^{-1} (1/n)$)

are satisfied, and

wherein said plurality of light sources are disposed in said plurality of light entrance areas

of said collimating plate respectively.

16.  (withdrawn):  A liquid crystal display apparatus comprising:

a liquid crystal display panel; and

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a lighting apparatus for launching light into said liquid crystal display panel, wherein said lighting apparatus comprises a light source;

a lamp housing for containing said light source, whose inner surf aces are covered with a diffuse reflecting layer; and

a collimating plate, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surf ace of said lens substrate;

a plurality of light entrance areas, each having a rectangular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses; and

a light shield layer formed on another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas, wherein, when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a length of a side of each of said plurality of light entrance areas by A;

a length of another side of each of said plurality of light entrance areas by B;

a size of each of said plurality of microlenses in a direction of said length A represented by Sa; and

a size of each of said plurality of microlenses in a direction of said length B represented by Sb, the following formulae (2) and (3):

$$Sa \geq 2t \times \tan \theta + A \qquad\qquad (2)$$

$$Sb \geq 2t \times \tan \theta + B \qquad\qquad (3)$$

(with the proviso that $\theta = \sin^{-1}(1/n)$)

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are satisfied.

17. (withdrawn): A liquid crystal display apparatus comprising:

a liquid crystal display panel; and

a lighting apparatus for launching light into said liquid crystal display panel, wherein said

lighting apparatus comprises a collimating plate; and

a plurality of light sources, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas, each having a rectangular form a center of which is on

an optical axis of each of said plurality of microlenses and set on another surface of the lens

substrate reverse to said plurality of microlenses; and

a light shield layer formed on another surface of said lens substrate reverse to said

plurality of microlenses so as to cover other area than said plurality of light entrance areas,

wherein, when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a length of a side of each of said plurality of light entrance areas by A;

a length of another side of each of said plurality of light entrance areas by B;

a size of each of said plurality of microlenses in a direction of said length A represented

by Sa; and

a size of each of said plurality of microlenses in a direction of said length B represented

by Sb, the following formulae (2) and (3):

$$Sa \geq 2t \times \tan \theta + A \qquad\qquad (2)$$

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$$Sb \geq 2t \times \tan \theta + B \qquad\qquad (3)$$

(with the proviso that $\theta = \sin^{-1} (1/n)$)

are satisfied, and

wherein said plurality of light sources are disposed in said plurality of light entrance areas of said collimating plate respectively.


18. (withdrawn): A collimating plate comprising:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas disposed on another surface of said lens substrate reverse to said plurality of microlenses, and having an optical axis of each of said plurality of microlenses; and

a light shield layer formed on said another surface of the lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas, wherein a form of each of said plurality of microlenses is a part of an ellipsoid shown in the following formula (4), wherein an eccentricity $\varepsilon$ of said ellipsoid is shown in the following formula (5) and wherein, in said ellipsoid, a focal point away from a side from which light is issued is on a position of each of said plurality of light entrance areas:

$$X^2 / a^2 + y^2 / a^2 + z^2 / c^2 = 1 \qquad\qquad (4)$$

$$\varepsilon = (c^2 - a^2)^{1/2} / c = 1/n \qquad\qquad (5)$$

wherein x and y represent axes on the surface of the lens substrate; z represents the

optical axis; and n represents a refractive index of a material forming said plurality of

microlenses.

19. (withdrawn): The collimating plate according to claim 18, wherein said plurality of

microlenses are either in circular form viewed from a direction of the optical axis and are

arranged in a closest packing state, or in hexagonal form viewed from the direction of the optical

axis and are arranged in a hexagonal close-packed state.

20. (withdrawn): A lighting apparatus comprising:

a light source;

a lamp housing for containing said light source, whose inner surfaces are covered with a

diffuse reflecting layer; and

a collimating plate, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas disposed on another surface of said lens substrate

reverse to said plurality of microlenses, and having an optical axis of each of said plurality of

microlenses; and

a light shield layer formed on said another surface of the lens substrate reverse to said

plurality of microlenses so as to cover other area than said plurality of light entrance areas,

wherein a form of each of said plurality of microlenses is a part of an ellipsoid shown in the

following formula (4), wherein an eccentricity $\varepsilon$ of said ellipsoid is shown in the following

formula (5) and wherein, in said ellipsoid, a focal point away from a side from which light is

issued is on a position of each of said plurality of light entrance areas:

$$X^2 / a^2 + y^2 / a^2 + z^2 / c^2 = 1 \tag{4}$$

$$\varepsilon = (c^2 - a^2)^{1/2} / c = 1/n \tag{5}$$

wherein x and y represent axes on the surface of the lens substrate; z represents the

optical axis; and n represents a refractive index of a material forming said plurality of

microlenses.


21.  (withdrawn): A lighting apparatus comprising:

a collimating plate; and

a plurality of light sources, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas disposed on another surface of said lens substrate

reverse to said plurality of microlenses, and having an optical axis of each of said plurality of

microlenses; and

a light shield layer formed on said another surface of the lens substrate reverse to said

plurality of microlenses so as to cover other area than said plurality of light entrance areas,

wherein a form of each of said plurality of microlenses is a part of an ellipsoid shown in the

following formula (4), wherein an eccentricity ε of said ellipsoid is shown in the following

formula (5) and wherein, in said ellipsoid, a focal point away from a side from which light is

issued is on a position of each of said plurality of light entrance areas:

$$X^2 / a^2 + y^2 / a^2 + z^2 / c^2 = 1 \tag{4}$$

$$\varepsilon = (c^2 - a^2)^{1/2} / c = 1/n \tag{5}$$

wherein x and y represent axes on the surface of the lens substrate; z represents the optical axis; and n represents a refractive index of a material forming said plurality of microlenses, and wherein said plurality of light sources are disposed in said plurality of light entrance areas of said collimating plate respectively.

22. (withdrawn): A liquid crystal display apparatus comprising:

a liquid crystal display panel; and

a lighting apparatus for launching light into said liquid crystal display panel, wherein said lighting apparatus comprises a light source;

a lamp housing for containing said light source, whose inner surfaces are covered with a diffuse reflecting layer; and

a collimating plate, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas disposed on another surface of said lens substrate reverse to said plurality of microlenses, and having an optical axis of each of said plurality of microlenses; and

a light shield layer formed on said another surface of the lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas, wherein a form of each of said plurality of microlenses is a part of an ellipsoid-shown in the following formula (4), wherein an eccentricity ε of said ellipsoid is shown in the following

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formula (5) and wherein, in said ellipsoid, a focal point away from a side from which light is

issued is on a position of each of said plurality of light entrance areas:

$$X^2 / a^2 + y^2 / a^2 + z^2 / c^2 = 1 \qquad (4)$$

$$\varepsilon = (c^2 - a^2)^{1/2} / c = 1/n \qquad (5)$$

wherein x and y represent axes on the surface of the lens substrate; z represents the

optical axis; and n represents a refractive index of a material forming said plurality of

microlenses.

23. (withdrawn): A liquid crystal display apparatus comprising:

a liquid crystal display panel; and

a lighting apparatus for launching light into said liquid crystal display panel, wherein said

lighting apparatus comprises a collimating plate; and

a plurality of light sources, wherein said collimating plate comprises a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate;

a plurality of light entrance areas disposed on another surface of said lens substrate

reverse to said plurality of microlenses, and having an optical axis of each of said plurality of

microlenses; and

a light shield layer formed on said another surface of the lens substrate reverse to said

plurality of microlenses so as to cover other area than said plurality of light entrance areas,

wherein a form of each of said plurality of microlenses is a part of an ellipsoid shown in the

following formula (4), wherein an eccentricity ε of said ellipsoid is shown in the following

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formula (5) and wherein, in said ellipsoid, a focal point away from a side from which light is

issued is on a position of each of said plurality of light entrance areas:

$$X^2 / a^2 + y^2 / a^2 + z^2 / c^2 = 1 \tag{4}$$

$$\varepsilon = (c^2 - a^2)^{1/2} / c = 1/n \tag{5}$$

wherein x and y represent axes on the surface of the lens substrate; z represents the

optical axis; and n represents a refractive index of a material forming said plurality of

microlenses, and wherein said plurality of light sources are disposed in said plurality of light

entrance areas of said collimating plate which are surrounded with said light shield layer and said

diffuse reflecting layer.

24. (new): The collimating plate according to claim 1, further comprising a plurality of

protrusions provided on a side of said another surface of said lens substrate, wherein an end

surface of each of said plurality of protrusions becomes each of said plurality of light entrance

areas.

25. (new): The collimating plate according to claim 24, wherein said light shield layer

and said diffuse reflecting layer are embedded among said plurality of protrusions.

26. (new): The liquid crystal display apparatus according to claim 10, wherein said light

diffusing plate comprises:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, into which said image-bearing collimated light is launched;

a plurality of light exit areas disposed on another surface of said lens substrate, from which diffused light to display an image is issued, each having a circular form a center of which is coincident with an optical axis of each of said plurality of microlenses;

a light shield layer formed on said another surface of the lens substrate reverse to said plurality of microlenses, and covering other area than said plurality of light exit areas; and

an anti-reflective layer formed on a surface of said light shield layer at a light exit side than said light shield layer, and covering other area than said plurality of light exit areas.

27. (new): A collimating plate comprising:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, from which collimated light is issued;

a plurality of light entrance areas disposed on another surface of said lens substrate, into which light is launched, each having a circular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses;

a plurality of protrusions provided on a side of said another surface of said lens substrate reverse to said plurality of microlenses, each end surface of said plurality of protrusions becoming each of said plurality of light entrance areas; and

a light shield layer formed on said another surface of said lens substrate reverse to said

plurality of microlenses and embedded among said plurality of protrusions so as to cover other

area than said plurality of light entrance areas,

wherein when a refractive index of said lens substrate is represented by n;

a thickness of said lens substrate by t;

a diameter of each of said plurality of light entrance areas by R; and

a size of each of said plurality of microlenses by Sr, the following formula (1):

$$Sr \geq 2t \times \tan \theta + R \tag{1}$$

(with the proviso that $\theta = \sin^{-1}(1/n)$)

is satisfied.

28. (new): The collimating plate according to claim 27, further comprising a diffuse

reflecting layer formed on a surface of said light shield layer at a light entrance side than said

light shield layer so as to cover other area than said plurality of light entrance areas.

29. (new): The collimating plate according to claim 28, wherein said diffuse reflecting

layer are embedded among said plurality of protrusions.

30. (new): The collimating plate according to claim 27, wherein said plurality of

microlenses are either in circular form when viewed from a direction of the optical axis and are

arranged in a closest packing state or in hexagonal form when viewed from the direction of the

optical axis and are arranged in a hexagonal close.-packed state.

31. (new): The collimating plate according to claim 27, wherein said refractive index of said lens substrate is between 1.4 and 2.

32. (new): A collimating plate comprising:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, from which collimated light is issued;

a plurality of light entrance areas disposed on another surface of said lens substrate, into which light is launched, each having a circular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses;

a light shield layer formed on said another surface of said lens substrate reverse to said plurality of microlenses so as to cover other area than said plurality of light entrance areas; and

a diffuse reflecting layer formed on a surface of said light shield layer at a light entrance side than said light shield layer so as to cover other area than said plurality of light entrance areas.

33. (new): The collimating plate according to claim 32, further comprising a plurality of protrusions provided on a side of said another surface of said lens substrate, wherein a and surface of each of said plurality of protrusions becomes each of said plurality of light entrance areas.

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34.  (new): The collimating plate according to claim 33, wherein said light shield layer and said diffuse reflecting layer are embedded among said plurality of protrusions.

35.  (new): A collimating plate comprising:

a lens substrate;

a plurality of microlenses disposed on a surface of said lens substrate, from which collimated light is issued;

a plurality of light entrance areas disposed on another surface of said lens substrate, into which light is launched, each having a circular form a center of which is on an optical axis of each of said plurality of microlenses and set on another surface of the lens substrate reverse to said plurality of microlenses;

a plurality of protrusions provided on a side of said another surface of said lens substrate reverse to said plurality of microlenses, each end surface of said plurality of protrusions becoming each of said plurality of light entrance areas; and

a light shield layer formed on said another surface of said Ions substrate reverse to said plurality of microlenses and embedded among said plurality of protrusions so as to cover other area than said plurality of light entrance areas.